INFERENCE REFERENCE SHEET

Stat 120 | Fall 2025

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Name	Type of Variable(s)	Statistic	Parameter
Mean	Quantitative	$\bar{x}$	μ
Proportion	Categorical	$\hat{p}$	p
Standard Deviation	Quantitative	s	σ
Difference in Proportions	2 Categorical (1 Response, 1 Explanatory)	$\hat{p}_1 - \hat{p}_2$	$p_1 - p_2$
Difference in Means	1 Quantitative (Response) 1 Categorical (Explanatory)	$\bar{x}_1 - \bar{x}_2$	$\mu_1 - \mu_2$
Correlation	2 Quantitative	r	ρ
Slope	2 Quantitative	b_1	β_1

Confidence Interval

1. I am ___ % confident
2. that the [population parameter in context]
3. is between ____ and ____ [units]

Hypothesis Test

1. At $\alpha =$ [significance level]
2. I [reject/do not reject] H_0
3. with a p-value of [p-value]
4. and conclude [population parameter] is …

	H_0 True	H_0 False
Reject H_0		
Do not reject H_0		

R Commands

```
library(CarletonStats)
```

Confidence Interval

Mean/Proportion: `boot(~<variable_name>, data = <dataset_name>, seed = <seed>)`

Difference: `boot(<response> ~ <explanatory>, data = <dataset_name>, seed = <seed>)`

Paired Diff.: `bootPaired(<response1> ~ <response2>, data = <dataset>, seed = <seed>)`

Correlation: `bootCor(<response> ~ <explanatory>, data = <dataset_name>, seed = <seed>)`

Hypothesis Test

Difference: `permTest(<response> ~ <explanatory>, data = <dataset_name>, seed = <seed>)`

Paired Diff.: `permTestPaired(<response1> ~ <response2>, data = <dataset>, seed = <seed>)`

Correlation: `permTestCor(<response> ~ <explanatory>, data = <dataset_name>, seed = <seed>)`